

Effect of Information Technology on Teacher's Teaching and Learning Behavior in the Classroom

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Abstract: *The present study investigates Behavior of teachers teaching in Karnataka Arts, Science and Commerce college Dharawad towards the use of ICT both descriptively and comparatively. In this study attempt has been taken to compare the Behavior of teachers on the basis of their sex and stream. For this study descriptive cum causal comparative method was adopted, where 60 teachers were taken randomly into consideration. In order to collect data a standardized Behavior scale was used. The findings of the study revealed that near about 60% teachers expressed strong positive Behavior and rest 40% positive Behavior towards the use of ICTs in teaching-learning process. The findings of the study also revealed no significant difference among the Behavior of teachers with reference to their sex and stream.*

Keywords: Behavior, ICTs, Teaching-learning

1. Background of the Study

In this 21st century, ICT is an agent of inviting many changes, opportunities and facilities for the development of student and as well as teachers. The integration of ICT in the field of teaching learning-process brings drastic change and improvement in the teacher's competency in the field of education both in developed and developing nation. ICT helps to create congenial environment and provides opportunity to transmit knowledge in an easier way which helps to both teachers and students for fostering their academic boundaries. One of the prominent mottos of teaching through ICT is developing teaching competencies among the teachers at different levels. The teachers need to be adequately prepared to get much more idea about the application of ICTs both theoretically and practically, so that it may help them to overcome different classroom related issues viz: diversity and heterogeneity. The ICTs play vital role in designing curriculum as per the needs of the students and society, on the other hand, it also helps for careful preparation, management of resources and continuous professional support to the teachers in academic perspectives. In case of preparing ICT based curriculum more concerns regarding the findings of educational research are needed, for which also ICT plays vital role. The aim of education for learners is to help them in acquiring and constructing knowledge and developing skills which assist them in improving their life prospects, as well as equip them to be able to contribute towards national growth and development for the welfare and prosperity of society and nation as well, where also the role of ICTs can never be underestimated. Therefore, it can be stated that individual's growth and sustainable development for the community and society are also possible with the use of ICT in teaching-learning process. The higher educational institutions and training have a primary purpose of preparing teacher with meaningful vivid knowledge and skills, where also ICTs play vital role. In this 21st century teaching has become one of the most challenging professions as knowledge is expanding rapidly and much of it is available to students as well as teachers in the internet at the same time. In this present era, the definition of learning is shifted from acquisition of knowledge to the construction of knowledge,

where the teachers play the role of facilitator and provides full freedom to the students to promote independent learning.

The technological advancement of innovative instruments has created new possibilities in teaching profession and similarly these have placed more demands on teachers to learn about the use of adequate technologies to make their teaching interesting and effective. Simply having ICT tools in schools or college will not guarantee their effective use, for this some sorts of orientation and refresher training courses are required. It can be stated that ICT is one of the greatest instruments to strengthen the teaching-learning process increasingly, to raise quality of education by making learning and teaching as an active process connected to real life. Therefore, in the present study

2. Review of Related Literature

The review of related literatures revealed that the accomplishment of instructional objectives highly depends on the Behavior of the teachers towards the application of ICTs in teaching learning process. In this regard, the Behavior of teachers toward ICT was found positive and although it didn't differ in terms of their gender, but it differs regarding age, computer ownership at home and computer experience.

- (Cavas et.al, 2009; Kaur, 2012; Ndibelema, 2014), it has been advised to the learner as well as teacher that if educators has personal computer, he /she has better experience then other. The opinion of student- teacher towards used of ICT in teaching learning process the student-teachers was positive Behavior towards the use of ICT and there was no significant impact of the Behavior of student-teachers on their academic achievement and necessity for developing positive Behavior towards the use of ICT among the student-teachers, so that they can keep themselves abreast of the latest technologies and later on integrate in their professional lives as per the demand.
- (Agrawal and Ahuja, 2013). ICT has created a new or powerful learning environment where knowledge can be transmitted to the student for improving knowledge, skill

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in their self-directed way thus the level of students' Behavior towards ICT in teaching and learning was positive despite the challenges in its integration in public secondary schools.

- (Lydia, Wilson, and Pachomius, 2015; Semerci and Aydin, 2016). Many teachers and student teachers are not getting appropriate environment about the application of ICT or computer in their locality so the use toward s computer during teaching –learning some are showing positive Behavior and some are showing negative as their locality is concerned, it means researcher found significant difference with their Behavior respect to his /her locality of home and majority of teacher have significantly positive Behaviors towards ICT.
- (Ganesan and Krishnakumar, 2016). The findings revealed that only 25% teachers expressed favorable Behavior towards the use of technology in teaching, and also no significant difference was found in between the male and females (Mahajan, 2016). The locality and gender of teacher-trainees do not bring differences in the Behavior towards the use of information and communication technology in teaching.
- (Dixit and Kaur, 2015). Research also shows that the use of ICT has brought many problems and issues, challenges and opportunities, which ultimately influenced the world like no other invention in the recent past. The field of education has also got greatly influenced by ICTs. In case of teacher education, teacher-educators towards the use of ICT along with knowledge and levels of ICT tools and devices usage among teacher-educators in teaching training colleges. The teacher-educators have positive Behavior to some extent towards the ICT and its tools and devices usage in teacher education process and also discloses that teacher-educators have lack of training and technical support. (Beri and Sharma, 2019).

Rationale of the Study

The analysis of the related literature cited above revealed that the use of Information and Communication Technology (ICT) plays a vital role in teaching-learning process, where the Behavior of teachers is mostly positive in nature. Practically it can be said that there is a gap between the goals of students and teachers and everyday school life. Therefore, the use of ICTs in teaching-learning process affects the willingness of students and teacher, where more attention should be paid particularly to their learning experiences. In this 21st century, different novel innovations and discoveries are the greatest instruments for bringing changes and innovations social justice. Researches says that the use of both electronic (i.e. computers) and printed media which helps the student to pursue their higher education without attending classes on a college or university campus, means totally in open and distance mode. The role of ICTs in education cannot be underestimated, as both the teachers and students are highly benefited from this. It helps to make teaching faster and learning easier, therefore, the present study is taken into account to investigate the Behavior of teachers about the use of ICT in teaching-learning process.

Statement of the problem

The analysis of the research gaps found in the rationale of the study; the following research questions were emerged in the mind of the investigators;

- 1) What is the Behavior of teachers teaching in university about the use of ICT in teaching-learning process?
- 2) Are there any significant differences among of Behaviors of teachers in relation to their sex and streams?

In order to seek answers of the above questions the present study was undertaken entitled as “Behavior of Teachers about the Use of Information and Communication Technology in Teaching-Learning Process”

Operational Definitions of Key Terms

- 1) Behavior: Behavior refers to the reaction of the teachers about the use of ICT in teaching learning process. In the present study, Behavior towards ICT covers the reactions of teachers about the significance of ICT in education process.
- 2) Teachers: In the present study, teachers refer to the teaching personnel teaching at university level. In this study it is delimited to the teachers Karnataka Arts, Science and Commerce college Dharwad.
- 3) Teaching Learning: Teaching-learning process refers to the formal mode of interaction between teachers and students in a suitable atmosphere.
- 4) ICTs: ICTs indicate the use of different digital communication and technologies in the field of education. It covers every aspect of educational technology which are used in education to make the teaching faster and learning easier.

Objectives of the Study

- 1) To study Behavior of teachers about the use of ICTs in teaching-learning process
- 2) To compare mean scores of Behaviors of male and female teachers towards the use of ICT.
- 3) To compare the mean scores of Behaviors of arts, science and commerce teachers towards the use of ICT.

Hypotheses of the Study

- 1) The Behavior of teachers about the use of ICTs in teaching learning process is positive.
- 2) There exists no significant difference among the mean scores of Behaviors of teachers in relation to their sex and stream.

Scope and Delimitation

- 1) The present study was delimited to the teachers of Karnataka Arts, Science and Commerce college Dharwad only.
- 2) It is delimited to the Behaviors of teachers towards the use of ICTs in teaching-learning process only.

3. Materials and Methods

Method

As the purpose of the study was to study the Behavior of teachers towards the use of ICTs, the descriptive survey method was used, where the Behavior scale was distributed to the selected teachers and their responses were gathered.

On the other hand, causal-comparative method was adopted to compare the Behaviors of teachers about the use of ICTs in relation to their gender (Male vs Female) and streams (Arts Vs Science Vs Commerce). So, descriptive-survey cum causal-comparative method was used to investigate the present study.

Population and Sample

All the teachers teaching in Karnataka Arts, Science and Commerce college Dharwad were the population of the present study, out of which 60 teachers were taken into account randomly taking into consideration to their sex and stream. However, from each stream 20 teachers were taken including both male and females.

Tools and Techniques:

In order to collect data from the selected sample group, standardized Behavior scale developed by Ramos, Abad, Penalvo, Garcia and Conde (2014) was used. In this study, the tool was administered in google form, which is an online platform, where the responses of the items are submitted through social media or email. The tool was a five-point

Behavior scale comprising of 15 items. The Cronbach alpha reliability of the tool was 0.727, the construct validity was also examined and the KMO index of sample suitability was 0.883. The scoring guide prescribed by the developer was followed for the scoring of item-wise responses of the respondents.

Procedure of Data Collection

After preparing the sample frame of the present study, the investigators met with the selected subjects from KCD College and collected data by giving field visit personally.

Statistical Technique Used

In order to analyze the obtained data appropriate statistical techniques were used. In order to study the Behavior of the teachers descriptively, the cut off scores were calculated, the more the scores of the respondent, the more positive Behavior was assumed, on the other hand, the less the score, negative Behavior was assumed. In order to compare the mean scores of the Behavior of teachers in relation to their sex, stream and teaching experience, parametric statistical technique ‘t’-test was used.

Table 1: Objective wise analysis chart

S. No	Objectives	Data Source	Tool	Analysis
1	To study Behavior of teachers about the use of ICTs in teaching-learning process	Teachers of GMU	Behavior Scale	Calculating Cut off score and analyze quantitatively
2	To compare mean scores of Behaviors of male and female teachers towards the use of ICT	Teachers of GMU	Behavior Scale	t-test
3	To compare the mean scores of Behaviors of arts, science and commerce teachers towards the use of ICT	Teachers of GMU	Behavior Scale	t-test

4. Analysis and Interpretation

Objective-1

The first objective of the study was to investigate the Behavior of teachers teaching in university. In order to accomplish this objective, first of all the data was gathered from the sample of 60 teachers and all the data was organized and scored as per the scoring guide. After scoring the data the cut off score was calculated, the table below gives the cut off score.

Table 2: Cut-off score on the Behavior of teachers

S. N	Cut Off Scores (No. of items*response)	No. of Sample		Result
1	15*5= 75	36	60%	Strongly Agree
2	15*4= 60	24	40%	Agree
3	15*3=	45	-	Undecided
4	15*2=	30	-	Disagree
5	15*1=	15	-	Strongly Disagree

After determining the range, the raw scores of the sample was taken into account and accordingly division was made to test their Behavior towards the use of ICTs. The raw scores which touched the highest cut off score were

considered as highly positive Behavior and lower raw scores signified negative Behavior towards the use of ICTs. However, as per the data of the table, it was vivid that the teachers showed a positive Behavior towards the use of ICTs in education. All the obtained raw scores were confined to the first two specified range i.e. 61-75 and 46-60, which reveals positive Behavior.

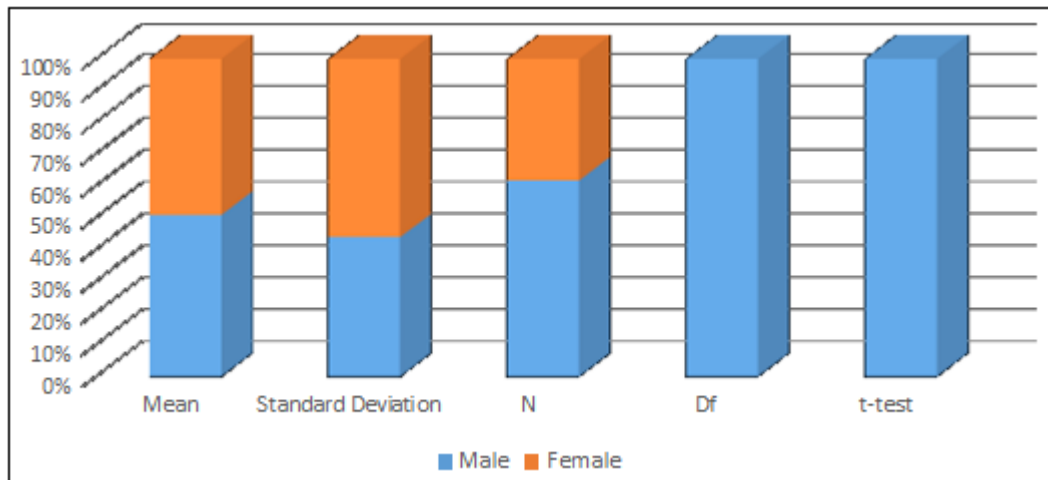
Objective-2

The second objective of the study was to compare the Behavior of male and female teachers about the use of ICT in education. In order to accomplish this objective, the entire data was divided into two parts in relation to sex i.e. male and female, after that independent t-test was used with the help of SPSS (Statistical Package for Social Science) and the conclusion was drawn which is revealed from the table below;

Table 3: Sex-wise mean, SD, N, df and t-value on Behavior of teachers

Sex	Mean	Standard Deviation	N	Df	t-test
Male	63.80	2.99	37	58	1.219
Female	62.00	3.84	23		

Not significant at 0.05 level



From the Table-3, it can be seen that the t-value is 1.219 which is not significant at 0.05 level with df= 58 indicated that the mean scores of males and females do not differ significantly as the obtained t-value 1.219 was less than the table value 2 at 0.05 level. Thus, the null hypothesis that there is no significant difference between the mean scores of Behaviors of male and female is accepted. It may therefore, be said that the Behavior of both male and female teachers about the use of ICT in teaching-learning process is similar.

Objective-3

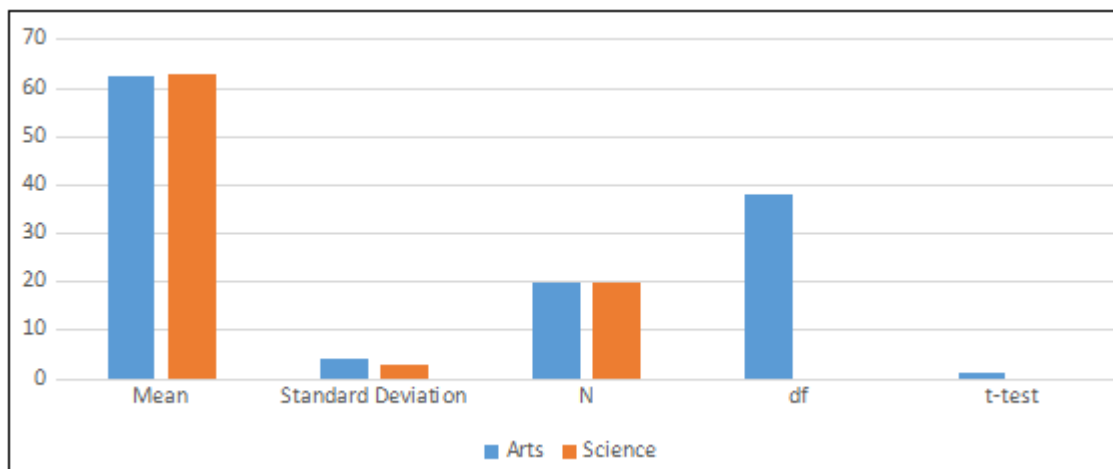
The second objective of the study was to compare the Behavior of teachers in relation to streams about the use of ICT in education. This objective was divided into three sub-

objectives viz: Arts Vs Science, Arts Vs Commerce, Science Vs Commerce; and accordingly, calculation was made. In order to accomplish this objective, the entire data was divided into two parts in relation to stream i.e. Arts and Science, after that independent t-test was used with the help of SPSS and the conclusion was drawn which is revealed from the table below;

Table 4: Stream wise mean, SD, N, df, t-value on the Behavior of Arts and Science teachers

Stream	Mean	Standard Deviation	N	df	t-test
Arts	62.70	4.24	20	38	1.30
Science	62.85	2.90	20		

Not significant at 0.05 level



From the Table-4, it can be seen that the t-value is 1.30 which is not significant at 0.05 level with df=38 indicated that the mean scores of teachers of arts and science stream do not differ significantly as the obtained t-value 1.30 was less than the table value 2.02 at 0.05 level.

Thus, the null hypothesis that there is no significant difference between the mean scores of Behaviors of Arts and Science teachers is accepted. It may therefore, be said that the Behavior of both teachers of arts and science stream about the use of ICT in teaching-learning process is similar.

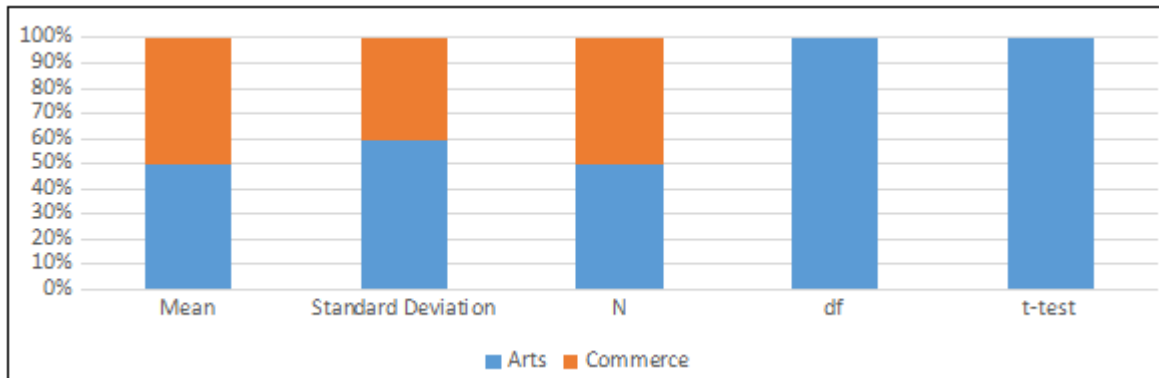
The next sub-objective of the study was to compare the Behavior of teachers in relation to streams about the use of

ICT in education. In order to accomplish this objective, the entire data was divided into two parts in relation to stream i.e. Arts and Commerce, after that independent t-test was used with the help of SPSS and the conclusion was drawn which is revealed from the table below;

Table 5: Stream wise mean, SD, N, df, t-value on the Behavior of Arts and Commerce teachers

Stream	Mean	Standard Deviation	N	df	t-test
Arts	62.70	4.24	20	38	0.218
Commerce	62.45	2.89	20		

Not significant at 0.05 level



From the Table-5, it can be seen that the t-value is 0.218 which is not significant at 0.05 level with df= 38 indicated that the mean scores of teachers of arts and commerce stream do not differ significantly as the obtained t-value 0.218 was less than the table value 2.02 at 0.05 level. Thus, the null hypothesis that there is no significant difference between the mean scores of Behaviors of arts and commerce teacher is accepted. It may therefore, be said that the Behavior of both teachers of arts and commerce stream about the use of ICT in teaching-learning process is similar.

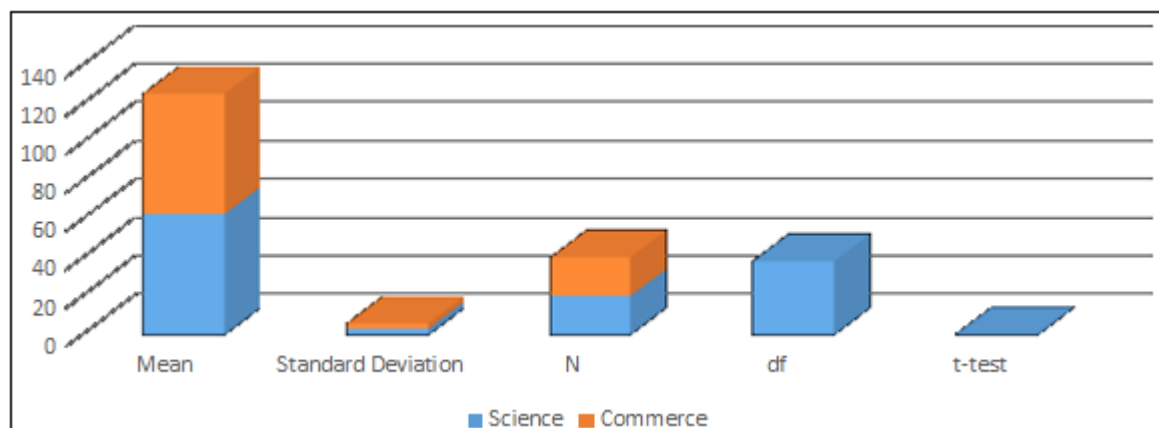
ICT in education. In order to accomplish this objective, the entire data was divided into two parts in relation to stream i.e. Science and Commerce, after that independent t-test was used with the help of SPSS and the conclusion was drawn which is revealed from the table below;

Table 6: Stream wise mean, SD, N, df, t-value on the Behavior of Science and Commerce teachers

Stream	Mean	Standard Deviation	N	df	t-test
Science	62.85	2.90	20	38	0.436
Commerce	62.45	2.89	20		

Not significant at 0.05 level

The next sub-objective of the study was to compare the Behavior of teachers in relation to streams about the use of



From the Table-6, it can be seen that the t-value is 0.436 which is not significant at 0.05 level with df= 38 indicated that the mean scores of teachers of science and commerce stream do not differ significantly as the obtained t-value 0.436 was less than the table value 2.02 at 0.05 level. Thus, the null hypothesis that there is no significant difference between the mean scores of Behaviors of science and commerce teacher is accepted. It may therefore, be said that the Behavior of both teachers of science and commerce stream about the use of ICT in teaching-learning process is similar.

- 2) It was found that the Behavior of both male and female teachers about the use of ICT in teaching-learning process do not significantly.
- 3) It was found that there exists no significant difference in between the Behavior of teachers of arts and science stream towards the use of ICT in teaching-learning process.
- 4) It was found that there exists no significant difference in between the Behavior of teachers of arts and commerce stream towards the use of ICT in teaching-learning process.
- 5) It was found that there exists no significant difference in between the Behavior of teachers of science and commerce stream towards the use of ICT in teaching-learning process

5. Main Findings

- 1) The findings revealed that near about 60% teachers teaching in university showed strong positive Behavior towards the use of ICTs in teaching-learning process as their raw scores touched the highest range; and on the other hand, near about 40% teachers showed positive Behavior.

6. Discussion of the results

The critical analysis of the collected related literatures and major findings revealed that the findings of the present study supported the findings of different research conducted in

different parts of the country and the world, which reveals that the teachers show positive Behavior towards the use of ICT in education, and no significant difference among of Behavior of teachers in relation to their gender, locality (Cavas et. al, 2009; Kaur, 2012; Ndibelem, 2014; Dixit and Kaur, 2015; Lydiah et. al, 2015; Ganeshan, 2016; Aydin et. al, 2016; Agrawal and Ahuja, 2018; Beri and Sharma, 2019). But a study revealed that only 25% teachers show positive Behavior towards the use of ICT (Mahajan, 2016), which is contradict to the findings of the present study.

7. Implications of the Study

The present study reveals that the Behavior of teachers about the use of ICTs in teaching-learning process is positive, and according to them the ICTs result in academic progress of the students with clear understanding of the subject matter. So, this present study implies that as much as possible, the use of different technological devices should be encouraged in classroom situations particularly in higher education to make the teaching easier and learning faster.

8. Suggestions for Further Research

- 1) In the present study, only teachers from KCD College were taken into account, so the teachers from other universities may be taken as sample and research may be done.
- 2) In this study attempt has been taken to compare the Behavior of teacher in relation to their sex, stream and teaching experience are taken into account, effort may be made to compare on the basis of their locality (urban and rural), type of institution (govt. and private) etc.
- 3) A research may be undertaken to study the impact of ICTs on the teacher effectiveness and academic achievement of students

9. Conclusion

After analyzing the results of the present study, it can be concluded that the primary objective was to compare the Behaviors of teachers, which revealed that no such statistical significance difference was found among the Behavior of teachers in relation to their sex, stream and teaching experience. So, it can be said that the teachers possess a strong positive Behavior towards the use of ICTs in teaching-learning process, it is because the ICTs help the teacher to make their teaching faster and learning easier, it allows the teachers to save their valuable time in presenting their ideas about the subject matter, it also helps them to meet the diversified needs and demands of the students. So, the ICTs should be used in every aspect of education.

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